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# Request for Continued Examination (RCE) Transmittal

Address to:
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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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| Application Number | 09/365,349 |
| Filing Date | July 30, 1999 |
| First Named Inventor | Terry et al. |
| Art Unit | 1638 |
| Examiner Name | ~~Ibrahim, Medina~~ Nelson, Amy |
| Attorney Docket Number | B99-085 |

**This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.**
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. Submission required under 37 CFR 1.114 Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

   a. ☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.
      i. ☐ Consider the arguments in the Appeal Brief or Rely Brief previously filed on _____
      ii. ☐ Other _____

   b. ☑ Enclosed
      i. ☐ Amendment/Reply
      ii. ☐ Affidavit(s)/ Declaration(s)
      iii. ☐ Information Disclosure Statement (IDS)
      iv. ☑ Other Response and Arisi et al. reference

2. Miscellaneous
   a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)
   b. ☐ Other _____

3. Fees The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
   a. ☑ The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 19-0750
      i. ☑ RCE fee required under 37 CFR 1.17(e)
      ii. ☑ Extension of time fee (37 CFR 1.136 and 1.17)
      iii. ☐ Other _____
   b. ☐ Check in the amount of $ _____ enclosed
   c. ☐ Payment by credit card (Form PTO-2038 enclosed)

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED**

| | | | |
|---|---|---|---|
| Name (Print/Type) | Richard Aron Osman | Registration No. (Attorney/Agent) | 36,627 |
| Signature | | Date | October 17, 2003 |

**CERTIFICATE OF MAILING OR TRANSMISSION**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

| | | | |
|---|---|---|---|
| Name (Print/Type) | Richard Aron Osman | | |
| Signature | | Date | October 17, 2003 |

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Terry et al.

Serial No. 09/365,348

Filed: July 30, 1999

For: *Trace Element Phytoremediation*

Group Art Unit: 1638

Examiner: Nelson, Amy
Ibrahim, Medina



Attorney Docket No. B99-084

CERTIFICATE OF TRANSMISSION
I hereby certify that this corr. is being transmitted by fax to the Comm. for Patents, Washington, D.C. 20231 at 703 872-9306 on October 20, 2003.

Signed _____
Richard Osman

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Examiner:

We thank Examiner Nelson for the phone call last week soliciting Applicant's input regarding the Board's vacatur of the prior rejections and remand of this application. Any efforts to advance prosecution are especially appreciated in this application, which has been pending for over 4 years and subject to three Office Actions on-the-merits and two appeals. Recapping:

The first Action was mailed Nov 23, 1999 and offered a number of rejections under 35USC103(a). The second Action was mailed Apr 25, 2000 and made final these art rejections. We filed an appeal on Jul 31, 2000, and in response to our appeal, Examiner Ibrahim indicated all the claims would be allowed if the word "Brassica" was inserted into claim 1 (i.e. making pending claim 3 the independent claim). We declined her amendment, whereafter instead of answering our appeal, she withdrew all her rejections, and reopened prosecution, this time offering rejections under 35USC112, first paragraph in her Action dated Oct 24, 2000. Inconsistently, she even applied her rejections against the same claim 3, which she had indicated was allowable (Action, p.8, lines 1-5). We filed a second appeal on Jan 19, 2001, and Examiner

Ibrahim answered on Jul 5, 2001. Her answer raised yet another issue, for the first time alleging that "none of the claimed genes encoding these enzymes has been isolated, characterized or described." (Answer, p.10, lines 3-4). In our Reply Brief filed Aug 16, 2001, we noted that this was a new rejection non-compliant with 37CFR1.193(a)(2), but solicited Board review anyway. We directed the Board to Table 1 (Specification, p.5, line 22 - p.6, line 16), showing that the recited genes were cloned from multiple species prior to our filing date. In addition, we appended to our Reply Brief Appendix A providing scientific citations documenting the pre-filing date cloning of these genes.

By Decision dated Jul 31, 2003, the Board vacated the enablement rejections noting that the Examiner was relying on prior art such as Noctor et al. to support a contention that the art demonstrates an unpredictable relationship between overexpression and heavy metal tolerance, yet did not explain how the cited art relates to the claimed methods. We note also, for the benefit of future prosecution, that the claims relate not to tolerance, but to enhanced accumulation. The Board also vacated the written description rejections, noting that:

> Table 1 at pages five to six of the specification discloses exemplary sulfate assimilation genes, and the species from which they have been cloned. Moreover, appellants attached to the Reply Brief citations demonstrating the pre-filing date cloning of the genes required for the claimed method. ... Because the examiner presented a new basis for the rejection in the Examiner's Answer, it is unclear whether the sulfate assimilation pathway genes were known and available to the skilled artisan at the time of filing, we vacate the rejection for further consideration by the Examiner.
> Decision, p.9, line 16 - p.10, line 6.

To expedite prosecution, we make of record with this letter the same Appendix A appended to our Reply Brief. In addition, we provide copies of the following papers and abstracts, specifically documenting the pre-filing cloning of each of the specifically recited sulfate assimilation pathway genes:

(a) E.C. 3.1.6.1 Sulfate permease; Leustek et al., 1994, Plant Physiol 105, 897-902.

(b) E.C. 2.7.7.4 Sulfate adenylyltransferase; Leyh et al., 1988, J Biol Chem 263, 2409-16.

(c) E.C. 2.7.1.25 Adenylylsulfate kinase; Jain et al., 1994, Plant Physiol 105, 771-772.

(d) E.C. 1.8.99.2 Adenylylsulfate reductase; Speich et al., 1994, Microbiol 140, 1273-84 (abstr).

(e) E.C. 1.8.1.2 Sulfite reductase (NADPH); Li et al., 1987, Gene 53, 227-34 (abstr).

(f) E.C. 1.8.7.1 Sulfite reductase (ferredoxin); Bork et al., 1998, Gene 212, 147-53 (abstr).

(g) E.C. 1.8.99.1 Sulfite reductase; Hipp et al., 1997, Microbiol 143, 2891-2902.

(h) E.C. 2.7.9.3 Selenide, water dikinase; Persson et al., 1997, J Mol Biol 274, 174-180 (abstr).

(i) E.C. 2.9.1.1 L-Seryl-tRNA (Ser) seleniumtransferase; Tormay et al., 1998, Eur J Biochem. 254(3):655-61.

(j) E.C. 4.2.99.8 Cysteine synthase; Hesse et al., 1995, Plant Physiol 108, 851-52.

We further note that Examiner Ibrahim withdrew the written description rejection as applied to claim 13, which differs from claim 1 only in the recitation of a particular sulfate assimilation pathway enzyme. Hence, of the previously appealed-from rejection complaining of "multitude of plant species overexpressing a multitude of sulfate assimilation enzymes for enhanced accumulation of a multitude of heavy metal", the Examiner abandoned her position regarding the "multitude of plant species" and "multitude of heavy metal" and relied on appeal only on the recitation of the sulfate assimilation pathway enzyme. We maintain that all the recited sulfate assimilation pathway enzymes are fully described, demonstrating to those skilled in the art, possession of the claimed methods - as described in the Specification (see, Table 1), the recited enzymes were well-known in the art and cloned in multiple species prior to our filing date.

To further expedite prosecution, we note that the Examiner premised her vacated enablement rejection on prior art such as Noctor et al., which was alleged to teach "unpredictability" by reporting "preliminary experiments" wherein ECS-overexpressing poplars and non-transformed poplars accumulated Cd to a similar extent. This premise is misplaced: the laboratory of Noctor et al. subsequently published their completed experiments (Arisi et al., Physiol Plant 109, 143-9, 2000, enclosed). When fully reported, their ECS-overexpressing poplar did indeed provide higher cadmium accumulation than corresponding untransformed

plants. (Arisi et al., supra; see abstract; para. bridging col. 1 and 2 of p.145; Fig.1). Of course, this full report also had the benefit of the subject Applicant's teachings, as reported in Zhu et al. Plant Physiol 119, 73-79, 1999 and Zhu et al., Plant Physiol 121, 1169-1177, as cited, inter alia, on p.144, col.1, lines 34-37 of Arisi et al., supra. A hyperaccumulating poplar is produced as readily as a hyperaccumulating Brassica plant. Hence, the vacated rejection is contrary to evidence now of record.

Appellants hereby petition for any necessary extension of time pursuant to 37 CFR 1.136(a). The Commissioner is hereby authorized to charge any necessary fees (small entity) or credit any overcharges associated with this communication to our Deposit Account No. 19-0750 (order no.B99-084).

Respectfully submitted,
SCIENCE & TECHNOLOGY LAW GROUP

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encl. Arisi et al., Physiol Plant 109, 143-9, 2000 (7 p.)
Leustek et al., 1994, Plant Physiol 105, 897-902.
Leyh et al., 1988, J Biol Chem 263, 2409-16.
Jain et al., 1994, Plant Physiol 105, 771-772.
Speich et al., 1994, Microbiol 140, 1273-84 (abstr).
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